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ABSTRACT

At least some of the reasoning processes involved in argumentation rely on inferences which do not fit within the traditional categories of inductive or deductive reasoning. The reasoning processes involved in plausibility judgments have neither the formal certainty of deduction nor the imputed statistical probability of induction. When utilizing these judgments, persons employ heuristic principles which operate as tacit decision rules. Plausible reasoning is characterized by defeasible premises--assumptions which are capable of being nullified--and abductive reasoning--inferences which best explain a set of data. These anchor how judgments based on plausible reasoning are understood. A defeasible assumption operates as a belief persons accept, but with a qualified commitment. It is proposed that the cognitive principles which inform these judgments rely on the use of heuristic principles. Four heuristic principles investigated as decisional strategies under conditions of uncertainty were: representativeness, used to decide whether a person or object possesses the characteristics of some class or group; availability, used to evaluate the frequency or likelihood of an event based upon how quickly instances come to mind; simulation, used to estimate the consequences of a series of events by employing construction of hypothetical scenarios; and adjustment and anchoring, used to estimate related events by beginning at a reference point recognized as an accurate anchor. Heuristic principles allow at least a partial explanation of how persons implement certain types of plausible decisions under conditions of uncertainty. (Contains 19 references.) (CR)

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Heuristic Elements of Plausible Reasoning

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At least some of the reasoning processes involved in argumentation rely on inferences which do not fit within the traditional categories of inductive or deductive reasoning. Some of the time persons employ plausibility judgments which invoke reasoning processes which fall outside the parameters of formal reasoning. The reasoning processes involved in plausibility judgments have neither the formal certainty of deduction nor the imputed statistical probability of induction. When plausibility judgments are utilized, persons employ heuristic principles which operate as tacit decision rules. In this paper I will summarize the characteristics of plausibility judgments, explain what is understood about the general nature of heuristic principles, and apply the features of heuristic principles which have been previously articulated to plausibility judgments.

Characteristics of Plausibility Judgments

Dudczak (1994) has previously proposed that although there are three approaches to plausibility, there is a common strand which connects them. Plausible reasoning is characterized by defeasible premises--assumptions which are capable of being nullified-- and abductive reasoning--inferences which best explain a set of data (Fischer 1992). The characteristics of defeasibility and abduction anchor how we might understand judgments based upon plausible reasoning. Each is elaborated briefly in the following.

A defeasible assumption operates as a belief one accepts, but with a qualified commitment. Some beliefs are held or rejected fervently. Other beliefs, while accepted, are more tentative. Assume for the moment that argumentation exists in a realm where beliefs about

the claim being offered range on a continuum from near certainty (and are accepted by the auditor as "true") to those which are assessed as highly unlikely (and which are rejected by the auditor as "untrue") (Walton 1992, Rescher 1976). The defeasibility of plausible arguments would place them towards the center of this continuum.

Belief claims also have a presumptive value to them. The general presumption for any belief is that one would maintain the belief until sufficient evidence and/or reasons were adduced against it. Presumptions serve as a conservative default to prior beliefs. However, the presumptive value for retaining a belief varies with the veracity of the belief. So while the general principle states that the presumptive value of a plausible argument is the extent to which a belief is held to be true, the presumptive value of a plausible belief is a "conditional" acceptance of the belief absent evidence which demonstrate it to be untrue. Walton (1992) notes

> A presumption can be put forward, like a mere assertion, even if there is no positive evidence for it (or not enough to justify it as an assertion). But if new evidence comes in at some later point in the dialogue--new (negative) evidence that refutes the proposition in the presumption--then that proposition has to be given up as a presumption that still holds. (5)

Consequently, the defeasible nature of plausibility judgments causes them to be tentative and less durable than other forms of reasoning. A plausible explanation is conditionally maintained upon the absence of evidence which would prove contrary to it. When sufficient contrary evidence is produced, the previously held belief should be abandoned.

Then the question may be asked, "Abandoned for what?" Because a tentative belief cannot be maintained does not necessarily mean that its opposite must be embraced. Here the nature of abductive reasoning may be introduced. Abduction may be understood as reasoning

among alternative explanations to that which best explains what is known, more simply, reasoning which provides the "best fit." Imagine a series of four points which ascend in a diagonal pattern from left to right. In answer to the question, "What line best explains the four data points?" one may immediately recognize that more than one may plausibly pass through a finite number of data points. The defeasibility principle cannot be used to exclude an alternative because as long as the line meets the condition of passing through the four points, it is a plausible explanation of the data pattern. One could introduce additional data points which would disqualify some of the candidates, a line which would not accommodate the additional data would be rejected by its failure to account for new (negative) evidence--a defeasible flaw. Of course, if there are no additional data points which are known, the defeasibility standard is inadequate by itself to aid our selection.

When one introduces a "best fit" standard, one can exclude alternatives not because they can't fit the data, but rather because they don't meet the additional standard. In answering the question of which line best explains the data points, one may employ a standard of parsimony--the principle that a minimal number of laws explaining a phenomenon is preferable to competing explanations which employ more numerous or complex laws (Dubin 1978). While the employment of a parsimony standard for "best fit" may be argued on theoretical grounds (e.g., is a less complex explanation always preferable to a more complex one), it nevertheless is consistent with Rescher's "cardinal rule" to "never make the more plausible give way to what is less so." (14) when resolving conflicting claims.

The view that reasoning is plausible because it meets two standards--defeasible premises and abductive reasoning--meets the several approaches which have been articulated

on plausibility (Dudczak 1994). It is now proposed that the cognitive principles which inform plausibility judgments rely on the use of heuristic principles.

The Nature of Heuristic Principles

Heuristic principles are simple decision rules through which individuals make judgments. Instead of using all available and relevant information, individuals make inferences based upon "adequate" instead of "optimum" information (Tversky & Kahneman 1973, 1974, Petty & Cacioppo 1986, Taylor and Fiske 1991). Heuristic processes represent cognitive shortcuts. Events, episodes and arguments are assessed as possessing (or not possessing) relevant features which would allow their inclusion from category lists. The application of heuristic principles is "tacit" insofar as they operate beyond the individual's ability to offer an explicit account of their operation. (Polanyi 1969 [1964]). The individual "knows" beyond what can be explained. As such, heuristic principles, while explaining decisional processes, do not operate as "rational rules" for decision making, but rather may be understood as the rationalization of decision making. If sometimes we subconsciously categorize features of persons or objects without thinking about them, then it would appear likely that similar subconscious categorizations would also occur with some arguments. Some claims may be plausible because they uncritically appear to fit our scheme of the plausible.

One may ask "why" individuals rely upon heuristic principles for decision making when more complete accounts would be preferred. A simple, pragmatic reason for our reliance upon heuristic principles suggests we utilize them for reasons of economy. Each of us is potentially subject to many decisions, each of which could accompanied by an enormous amount of information. Moreover, the importance of each decision may be of varying

personal significance. The time demands of honoring each decision with elaborate and complex decision making processes is a luxury most of us cannot afford. Consequently, most of us under many circumstances becomes a "satisficer" who makes adequate inferences and decisions, rather than an "optimizer" who reaches the best possible inferences and decisions (March & Simon 1958).

One may recognize that a tendency towards a simplified "satisficing" process of inference and decision making is subject to bias through the exclusion of relevant information and the operation of perceptual bias. This may be an unavoidable consequence of heuristic processing, but one which is not as deleterious as may first appear. Holyoak and Nisbett (1988) point out that *any* method of inferring general rules from limited data needs to be biased to generate useful hypotheses. Otherwise, there is no basis for restricting the induction task. Heuristics provide a constraint upon unlimited inferential processes which would ultimately lead to many false paths and inefficiently use time. Were we to approach every induction task without preconceptions, the number of possibilities generated would make the inference task unmanageable.

The argument concerning simple decision processes--heuristic principles--is not a question of whether we *should* use, but rather a question of how we do, in fact, use them. As a means of processing information and informing plausible decisions, heuristic principles need to be combined with our understanding of argumentation. Several heuristic principles have been sufficiently researched to explore this connection.

Heuristic Principles and Plausible Reasoning

Four heuristic principles have been adequately researched which appear to inform plausible reasoning. These four heuristic principles--Representativeness, Availability, Simulation, and Adjustment and anchoring--were investigated as decisional strategies under conditions of uncertainty. Since the condition of uncertainty appears to correspond with the circumstances under which we make plausible decisions, they are offered here as the best candidates to consider, although other heuristic principles presumably operate.

The claim that conditions of uncertainty lend themselves to plausibility judgments is based on the defeasible and abductive characteristics of plausible reasoning. Remember that defeasible premises are those which are capable of nullification. Under conditions of uncertainty, commitments made by individuals to their beliefs are tentative. Similarly, under conditions of uncertainty, the explanation for what is inferred would likely be the "best fit" from among competing explanations given the information available. Like the explanation of the best line to explain four data points, our explanation of the data pattern seeks to explain what we know based on limited information.

The representativeness heuristic (Kahneman & Tversky 1973; Tversky & Kahneman 1982, 1974) is used to make judgments about probability of the type is "A" a member of category "B." This type of question might commonly occur when individuals decide whether a person or object possesses the characteristics of some class or group. The judgment that a person of unusual height and apparent athletic ability is likely a basketball player would be a common inference using the representativeness heuristic. With more extensive information about an individual's characteristics, one could probably add up the probability that a given individual <u>is</u> a basketball player. But this task would take a very long time. In this type of

case the representativeness heuristic provides a quick and simple solution. Based upon the observation of a few representative characteristics, one would likely judge the observed individual to likely be a basketball player.

The representativeness heuristic is a judgment of relevancy (how well do the attributes of "A" fit category "B"?) that produces a probability judgment (how probable is it that "A" is an example of category "B"?). Judgments of representativeness may be as accurate as judgments formed used a more extensive analysis, but their statistical accuracy, per se, is not the basis for their formulation and use. Rather, if they are formulated without apparent contrary evidence (defeasibility), and they represent the best fit given what is available (abduction), then it would appear that judgments based upon apparently representative features employ a heuristic principle which operates in support of plausible reasoning.

A second heuristic, availability (Tversky & Kahneman 1973; Gabrielcik & Fazio 1984), is used to evaluate the frequency or likelihood of an event based upon how quickly instances come to mind. When examples are readily available and easily brought to mind, people may be inclined to inflate their estimate of the likelihood of an event's occurrence. When examples are less readily available, it may have the effect of deflating an estimate of the event. For example, if we were to ask our college seniors how easy/hard it was for last year's class to get a job, their estimates of the ease of difficulty of securing employment would be influenced by the number of instances they could produce. If they could readily cite a number of cases where last year's seniors rapidly found employment, they would tend to inflate their judgment of how well graduates fared nationally. Conversely, if they could

not readily think of many instances of college seniors finding employment, they would tend to deflate their estimate of national figures.

While the prospect for bias through inflated or deflated estimates of likelihood represent a clear potential bias from the employment of this heuristic, it is not without utility in making plausibility judgments. Certainly many instances in which examples readily come to mind represent instances when the *actual* frequency of their occurrence is high. Their availability is high because of a corresponding frequency in the environment at large. However, even assuming there is a bias located in the experience of the observer, the defeasible nature of exaggerated inferences makes them subject to disconfirmation. Negative evidence can be adduced against such estimates.

A third heuristic principle is the simulation heuristic (Kahneman & Tversky 1982; Wells & Gavanski 1989). It extends the availability heuristic to the construction of hypothetical scenarios to estimate the consequence of a series of events. The simulation heuristic operates to make predictions for multiple sequence events. Because there are several competing sequences possible, the assessment we attempt to make is a plausibility judgment of the most likely one. Imagine an event like the following: You have held a party in your parents' house in which your guests damaged the furniture [you have to imagine yourself as a teenager here]. What are your parents going to do? One scenario would be that they do nothing. Another scenario would find you grounded for a month. A third scenario would be to find yourself financially responsible for the damage. How would one assess the most likely outcome using the simulation scenario?

Kahneman and Tversky (1982) propose that you would think about how your parents have reacted to crises in the past. As you thought about your parents and their reactions, you would generate these scenarios in your mind. The ease with which a particular scenario comes to mind would be used to judge what would actually happen. That is, the heuristic of simulation is not the probability of the scenario's calculation, but rather the one that seems easiest to imagine. Simulation heuristics most frequently are employed for predictions and assessing causality.

Simulation judgments appear to meet both defeasibility and abduction standards for plausible reasoning. The defeasibility of premises occurs when one can imagine the counter cases of a scenario which might cause one to reject it as plausible. The best fit of abduction would occur through the comparison scenario outcomes. Given history with your parents, how often have they actually employed scenario one, two or three. The scenario which is least contradicted and fits most of the pattern of previous like instances would be the most plausible outcome.

A final heuristic principle employed in plausible reasoning is the use of anchoring and adjustment (Wyer 1976; Plous 1989). When making judgments, people will often begin with a reference point and then adjust it to make a final judgment. The reference point serves as an anchor, and starting with what we presume to be an accurate anchor, we adjust our estimate of related events to it. For example, if one knew what the price of a round-trip airline ticket was to San Antonio last year, this information would anchor our knowledge of the cost of flying to the conference this year. Knowing that a price war was looming by the airlines, one would adjust her estimate of how much the ticket would cost. In a similar

manner we estimate what the behavior of other people will be like using ourselves as the anchor (and then adjusting the estimate of what someone else would do).

Anchoring a reference point under conditions of uncertainty (and apparent unfamiliarity) appears to have a primacy effect of sorts. Plous (1989), for example, found that an arbitrary anchor offered in a survey influenced people's subjective estimate of the likelihood of a nuclear war. Greenberg, Williams, and O'Brien (1986) found that the sequence order of jury instructions influenced the harshness of the verdict. When the harshest verdicts were presented to jurors first, it served as the anchor which resulted in comparatively harsher verdicts than occurred when the lightest verdicts were given to the jurors first.

Of course the influence of the anchor position is directly related to the familiarity of the person with the type of judgment s/he is asked to make. When we are uncertain with the subject matter about which we must render a decision, the anchor position suggested to us by an authoritative other may literally be all we know. Consequently, it should not be surprising that we embrace this information in order to make comparisons to our own judgments. Anchor and adjustment heuristics would especially appear to meet the best fit standard of plausible reasoning. How should one act when asked to make a decision in an area of unfamiliarity? Well, ask someone who knows about it. Their answer anchors our knowledge and we fit the circumstances of the judgment to be decided to this anchor. A plausible decision is one which has been adjusted from the referent point.

All four heuristic principles meet the characteristics of plausible reasoning. They operate with the prospect of giving way to new evidence which would cause a person to abandon his/her commitment to a belief, and they attempt to comport the information

available with the explanation which fits it best. Heuristic principles allow at least a partial explanation of how we implement certain types of plausible decisions, especially under conditions of uncertainty. Further exploration is needed to discover the dynamics of their inter-relationship to each other as well as the likelihood that other tacit decision rules influence the judgments we make.

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